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BY J. MASON WARREN, M.D.

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CASE I.—*Remarkable Tumor over the Os Frontis, containing Air.*—D. B., of Manchester, N. H., applied to me for advice, November 28th, 1861. Four years before, he had received a severe blow on the forehead from a heavy branch of a tree. Great swelling ensued, and he was confined to the house for a week or ten days. The swelling gradually subsided, leaving, however, a sensation of dull pain in the part, accompanied, from time to time, by soreness and tumefaction. In July, 1861, while at work in the hay-field, he was seized with severe headache and other symptoms indicative of cerebral disturbance. Soon after this attack, a tumor appeared over the seat of the original injury, covering nearly the whole forehead. After a great deal of suffering, a discharge of pus took place from the left nostril, affording temporary relief. Subsequently, the tumor became tense again, and was opened with a lancet, which gave vent to a small quantity of matter; a second operation resulted, as he says, in the escape of blood only. His sufferings continued to increase until the date of his visit to me. At this time they were so excessive, and the constitutional symptoms of such a character, as to lead him to the conviction that his case was altogether hopeless. The whole forehead was occupied by an elastic swelling, of the size of half of a large orange, partially divided in the centre by a vertical depression, caused, apparently, by the tendon of the occipito-frontalis muscle. The marginal base of the tumor seemed to be formed by an elevation of bone, about an inch high, as if the tumor had been forced out from within the cavity of the cranium, pushing the bone

before it. By pressing firmly upon the upper part of the tumor, irregular masses of bone could be distinguished, some of them loose, others forming bridges under which the fluid contents of the tumor could be forced with a gurgling sound. It was highly resonant on percussion. Air could be readily forced into it from the nostrils, and the tension thus imparted to it remained for a long time, owing, probably, to the interposition of a bit of loose tissue, acting like a valve. During violent exercise, also, the tumor generally became inflated.

The diagnosis was a collection of pus, beneath the occipito-frontalis muscle, communicating with the frontal sinuses; but whether it originated from periostitis, or from disease of the diplöe, or from a tumor arising within the cranium, appeared doubtful.

*Operation, Nov. 30th.*—The patient was etherized, and an incision made in the median line large enough to admit the finger. A quantity of air escaped, and the finger, which was passed into the wound, detected the fact that the bone was everywhere in a carious state. The incision was then extended, and crossed at right angles by another, so as to expose a large surface of the diseased bone. The whole external table of the frontal bone was much thickened, and in process of exfoliation. A probe passed readily into the frontal sinus, and from thence, with some management, into the left nostril. The patient, on recovering from the effects of the ether, was able to force air freely through the wound. Blood escaped, also, into the nasal cavities. The apparent elevation of bone around the tumor was not owing to an expansion of the outer table of the skull, as at first supposed, but to inflammatory action in the soft parts; a deception similar to that which is often found to follow blows on the head, causing an appearance frequently impossible to distinguish from a depression of the bone. In the present case the illusion was perfect. A compress was applied between the lips of the wound, which was left open to favor the separation of the necrosed bone. The patient was immediately relieved, and the following night slept better than for six months before. The fifth day after the operation, it was found possible to detach some large plates of bone, which were sufficiently movable to be taken away without violence. In the course of another week the patient went home, entirely free from pain and in good health; it was thought unnecessary to detain him longer in town, as the exfoliation of the carious bone would probably require a long time for its completion.

A month or six weeks later, he made a second visit to Boston, when, after considerable manipulation, another long and thick piece of bone was removed from near the centre of the os frontis. The anatomical appearance of this fragment led to the supposition that it might be made up of both tables of the skull. No bad symptoms followed its removal, and the suppuration of the wound was much diminished by it. His health appeared to be excellent.

Within the last few weeks he has again come to town, on account of a purulent collection under the integuments of the forehead. This being relieved by an incision, loose bone was again removed. It is probable that this process will be repeated until all the diseased bone is detached.

CASE II.—*Formidable Case of "Aneurism by Anastomosis" of the Scalp.*—S. J. M., a healthy young man, aged 19, entered the Hospital on the 15th day of April, 1861, for the treatment of a tumor of the scalp, which had lately grown with great rapidity. About five years ago, it was noticed that the bloodvessels under the skin of the forehead were becoming enlarged, but it was only for about a year that a decided tumor had existed. The tumor was situated in the median line, and measured in its longest diameter about three inches, and in its smallest nearly two, its elevation being about two inches above the frontal bone. Its shape was irregular, its bulk about that of half a large orange, its appearance that of a large mass of earthworms enclosed in a sack. It was of a reddish color, soft and compressible, and had a pulsation synchronous with that at the wrist. It was supplied by a great number of large, tortuous vessels, which pulsated strongly. The temporal and frontal arteries in front, and the occipital artery behind, seemed to afford the chief supply of blood to the tumor. The frontal arteries were especially enlarged, being quite equal in size to the radial artery.\* The patient had tried compression for six weeks without diminishing the size of the tumor, or the pulsation in it. All the vessels in the neighborhood of the tumor were not only greatly enlarged, but the whole surrounding tissue had that aneurismal thrill which belongs to affections of this description. It was spreading gradually and involving the whole thickness of the scalp on the top of the head. The attack of it, therefore, by ligature of the large vessels seemed to be at first of somewhat uncertain promise.

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\* This tumor was similar to one described by Prof. Mussey, in a case in which he tied both carotids, and also to one which I described in connection with a case in which I also tied both carotid arteries.

*Operation.*—On the 17th of April, the patient being etherized, a strong ligature was introduced under each large vessel supplying the tumor, by means of curved needles, and at as great a distance as possible from the erectile tissue composing it. The ligatures were tied as tightly as possible, including the skin. The effect of this was to diminish the pulsation in the tumor, but not entirely to check it. Inside this circle three needles were therefore introduced under the skin, each about two and a half or three inches long, so as to include all the tissue around the tumor. Ligatures were introduced beneath these needles, and firmly tied. This served to cut off the circulation between the tumor and the surrounding tissues. There still continued to remain a sensation of vascular motion in the substance of the tumor. Two strong ligatures were therefore passed through the base of this last circle, and were brought over the summit of the tumor, and firmly tied. The operation lasted about an hour and a quarter. In the evening the patient was quiet, and slept for a good part of the time; his pulse was 70. On the 18th, he had some headache, and was much inclined to sleep; skin hot; pulse 82. There was no pulsation in the tumor, and small vesications were appearing on its surface. On the 19th, he was comfortable; pulse, skin and tongue natural; bowels had moved without medicine; appetite fair, and no unpleasant symptoms. On the 23d, the patient had remained comfortable since the last report; was sitting up in bed. There was a slight serous discharge by the side of the needles. On the 24th, there was a slight swelling of the right parotid gland, and a glossy appearance of the tissues between it and the tumor. Water dressings were applied over the whole surface. On the 27th, a ligature and a needle were removed. 29th.—It was found that a part of the tumor included between the ligatures was still alive, but no pulsation could be detected in it. On the 2d of May, I removed all the sutures and a portion of the slough, which was partially detached. On the 11th of May, the patient was again etherized, and two large needles passed at right angles to each other under the base of that portion of the tumor which still remained alive. A large and strong ligature was then passed under them and tied with great force. On the 15th of May, the patient having gone on well, the tumor being quite loose, the needles were withdrawn. A thick silk ligature was now passed around the base of the tumor and tied with a jerk, cutting off its remaining attachments and completely separating all the diseased tis-

sue. This was followed by quite free bleeding, requiring the application of ligatures to one or two large arteries; the bleeding which occurred from the smaller vessels was checked by the use of a solution of perchloride of iron. On the 25th of May, the scab formed by the last application separated, leaving a healthy granulating surface. This healed kindly. Some weeks later, there being a suspicion of a slight erectile tissue remaining in a portion of the skin, I excised it, which finished the cure.

This case is interesting, first, from the large size of the erectile tumor; secondly, from the great calibre of the principal vessels which supplied it; thirdly, from the immunity from unhealthy action in the skin, notwithstanding the great amount of that tissue implicated in the ligatures. The parotid gland at one time was certainly irritated, and the straining of the whole scalp caused a certain amount of swelling and an approach to oedema, but there was never anything like erythema, and but little constitutional disturbance. There is but little doubt that if the tumor had gone on much longer unchecked, the vascular system of the scalp would have become so implicated as to make any attempt to relieve the patient by operation unavailing.

CASE III.—*Gun-shot Wound, cutting off the Vertebral Artery.*—Cornelius Mahoney, 11 years of age, was brought into the Hospital on the 27th of May, 1861, having received the charge of a pistol, loaded with stones, accidentally discharged by a companion. One of the stones grazed his forehead, a second struck him on the cheek, and the third penetrated the neck about half an inch below the mastoid process. He received the charge while in a stooping posture, and was taken up bleeding profusely. When brought into the Hospital the bleeding was nearly checked; water dressings were applied, and the patient kept very quiet. I saw him on the following morning, and as there was a disposition to hæmorrhage, the patient was etherized, with the object of removing the foreign body, if there was one, and checking the bleeding. A finger passed into the wound penetrated deep into the neck, and finally encountered what at first appeared to be a mass of gravel; a portion, however, being removed with the forceps, showed it to be bone, and what afterwards proved to be the transverse process of the second or third cervical vertebra. The hæmorrhage now returned violently, and but little doubt existed that the vertebral artery had been cut off. A systematic

plugging with small bits of sponge was made, and the bleeding checked. On questioning the father of the boy, it was ascertained that while they were engaged in arresting the bleeding at his house, with a handkerchief, a small pebble was discharged into it, driven out by the great force with which the blood gushed forth.

29th.—He had passed a pretty good night, and was free from pain, except in his left shoulder. Pulse reduced from 140 to 120. Towards evening, he became somewhat delirious. He went on pretty much in this way for eight days, pulse ranging from 120 to 140, feverish, and at times out of his head. On the 4th of June, his symptoms were somewhat better. The bandages had been cut off, and the sponges removed from the wound, on the 2d. On the afternoon of the 4th, a sudden hæmorrhage took place from the wound, amounting to eight ounces, and producing great depression; assistance being obtained, it was checked at once by plugging with sponges.

On the 6th, at two o'clock in the morning, a third bleeding occurred, which was promptly stopped, about two ounces of blood only being lost. Some of the old sponges were removed, and replaced by fresh ones, dipped in the solution of the perchloride of iron. From this time he lost no more blood, and the wound suppurated well, the sponges being all removed on the 10th. From the attendant inflammatory action, his head was drawn down to that side, but gradually righted after the wound had fully healed. Before he left the Hospital, which was on the 22d, a bit of bone was discharged, which, on examination, appeared to be the end of the transverse process of one of the cervical vertebræ.

He was seen a month afterwards, in perfect health.

CASE IV.—*Removal of the Lower Jaw for a Cystic Tumor; Subsequent Ligation of the Carotid Artery.*—Mrs. W., a widow, 49 years old, had had the wisdom tooth of the right side of the lower jaw extracted about twelve years ago; the socket remained quite sore for some time after the removal of the tooth. Six years ago the angle of the jaw began to enlarge, and the bone gradually expanded so as to form a tumor, the size of a hen's egg, which now encroached upon the cavity of the mouth, and displaced the tongue and other organs. The tumor was slightly elastic to the touch, and had very recently become a little tender on pressure; with this exception, there was no pain, and no inconvenience in mastication.

The disease involved the angle and ascending ramus of the jaw, and extended forwards as far as the second bicuspid tooth.

*Operation, March 30, 1861.*—An incision, commencing over the masseter muscle, about an inch below the zygomatic arch, was carried around the angle of the jaw as far as the angle of the mouth, exposing the facial artery, which was secured by two ligatures and divided between them. The flap thus marked out was dissected from the tumor, which was found to involve the whole substance of the jaw. The lower extremity of the original incision was then carried upwards to the angle of the mouth, and the whole flap dissected from the jaw, which was divided through the socket of the second bicuspid tooth. The bone was then seized with strong forceps in order to raise it from its adhesions to the surrounding parts, but on the application of a very slight degree of force it gave way, and disclosed the fact that the whole angle and ascending ramus of the jaw had become reduced to a sac or cyst containing a thick yellow fluid. Both the coronoid process and the condyle were completely excavated by the morbid growth, and the osseous tissue about the angle of the jaw had almost entirely disappeared. The operation was finished, for the most part, by the fingers, and the lingual nerve, which lay close upon the inner surface of the tumor, was dissected out and saved. Several vessels were tied, and the edges of the wound were brought together by sutures, three of which were placed in the mucous membrane of the mouth.

No severe constitutional disturbance followed the operation, and on the third day the wound was found nearly united. Two days later the face swelled, and the wound began to discharge pus. In the course of another fortnight, the wound had healed, with the exception of a small opening at its lower angle. On the 17th of April, a slight hæmorrhage, of perhaps two ounces, took place from this opening, and on the night of the 27th, when the patient had so far recovered from the operation as to think of going home, profuse bleeding occurred, which was with difficulty controlled by a sponge and compresses. In the course of the next day, all that side of the face became œdematous. On the 29th, it became evident that the hæmorrhage could not be controlled, by even the most careful plugging of the wound, and the ligature of the carotid artery seemed to offer the only chance of saving life. The patient was therefore etherized, and the sponges removed from the wound. The finger passed readily from the external aperture, corresponding in position

to the angle of the excised jaw, as far as the glenoid cavity of the temporal bone, which felt rough and carious. Pressure upon the carotid artery of the affected side diminished the bleeding, but did not entirely check it, and no greater effect followed the compression of both carotids. The artery was tied at the middle of the neck, after a somewhat tedious dissection, owing to the œdematous state of the tissues. A slight oozing of blood continued, but it was easily arrested by forcing a piece of sponge deep into the wound in the direction of the bleeding vessels. On removing the patient to her bed, it was noticed that the side of the body opposite to that upon which the artery had been tied, had become completely paralyzed. The paralysis gradually diminished as the strength of the patient improved, and on the 14th of May the ligature of the carotid came away. The sponges had been previously removed from the wound, which healed rapidly. An abscess, which formed behind the ear, did not delay the cure, and on the 24th of May the patient was discharged cured, but still somewhat feeble.

It should have been remarked, that prior to commencing the operation on the jaw, it had been decided to uncover the tumor, and if the cyst was found but partially to occupy the bone, to remove a portion of it without removing the whole bone. It was evident, however, as soon as the tumor was exposed, that all the bony tissue had disappeared, and its place had become occupied by a thin and almost transparent cyst, of the consistency of parchment, the coronoid and condyloid processes making a part of it. The removal of the whole bone was therefore performed.

The effects of the ligature of the carotid were quite remarkable. The current of blood was sufficiently checked to allow of effectual plugging, which before would not stem the current of blood. The effect on the brain was certainly very singular. A hemiplegic affection, three or four days after the ligature of the carotid, is not uncommon, arising, probably, from an inflammatory action taking place in the substance of the brain. In the present instance the paralysis was immediate, and must have arisen from the sudden diminution of the supply of blood to the brain, following upon the great drain to which the system had been subjected a few days before.

The patient has been heard from lately, having perfectly recovered her health.

CASE V.—*Dislocation into the Foramen Ovale of four weeks' standing, with other Injuries—Reduction.*—Oct. 9th, 1861. T. S., 19 years of age, twenty-seven days ago fell from the foreyard of a ship while at sea, striking first on the roof of the cabin, and from thence slipping off, and striking the rail. By the first blow, the hip was dislocated, and by the second the right arm was broken in three places, viz., the head of the bone, the olecranon, and the wrist. The bones of the arm had united when he entered the hospital—the joints being rigid, and the shaft of the humerus much in advance of the head of the bone. The patient was in rather a feeble state, and had gone through much suffering at sea—for four days after the injury there being a suppression of urine. The left thigh was out of its place, the knee was bent, the shaft of the bone projected forwards, forming an open angle with the body. The toes presented almost directly forwards. The trochanter was not prominent like the opposite side, but there was no hollow. At the upper and inner part of the thigh a prominence could be felt not perceived on the other side, and this could be distinctly felt in the rectum, and was undoubtedly the head of the bone.

The patient being fully etherized, the thigh was seized and efforts made to break up any adhesions which might have been formed, by making motions of flexion and rotation. By these manipulations, the head of the bone was dislodged from its position, and slipped up on the pubis, but would not enter the socket. On further efforts being made, it slipped round under the socket, and finally lodged on the dorsum ilii. In the course of the reduction, in fact, the appearances presented by all the different dislocations of the hip-joint were imitated. The pulleys were now applied, and the limb being gradually drawn down, when opposite the socket, a movement of rotation was given it, and it slipped in. After the reduction, a rigidity of the muscles on the part of the thigh still gave it an unnatural look, as if it might still be out of its place, but the restoration of an equal length to the other, and the free motions which could only take place with the head of the bone in the socket, dispelled any doubts.

The feet were now bound together, and he was taken down to bed. When seen, an hour after, the limb again stuck inwards, as before the operation, and it was said that it had assumed that position after some struggles made by the patient in coming out from the effects of the ether. A little force being applied to it, brought

it down to a flat position in bed. While under the ether, flexion was given to the stiffened joints of the upper extremity.

The patient complained much of pain in the upper part of the thigh, and required sixty drops of elixir of opium to make him sleep.

On the following day, there was a suppression of urine, similar to what had occurred after the accident. He gradually but completely recovered the use of all his joints in about a month after the reduction.

CASE VI.—*Dislocation of the Dorsum Ilii of twenty-three days' standing—Reduction.*—J. M., 36 years old, a man of strong muscular development, was attempting to raise a man who was lying across a railroad track. In making the effort he fell, the man falling and striking against the pelvis and left thigh, bringing him to the ground. He was unable to rise, and was taken to a neighboring house, where his hip was examined. The injury was supposed to be a sprain. He remained in bed for twenty-three days, and as the limb did not recover, he was advised to go to the hospital. Doing so, he walked a mile and a quarter to the railroad station. He came by the train to Boston, and entered the hospital March 13th, 1862. On making an examination, I at once perceived that the limb was not in its natural position, and the symptoms of a dislocation upon the dorsum ilii. The limb was shortened about two inches; the trochanter being about that distance nearer to the crest of the ileum than that of the opposite side, and the toes everted, but did not lie across the instep of the other side—there being this peculiarity, that the leg stood off from the thigh, forming an angle with it, and giving him a knock-kneed appearance. The whole limb was much more movable than I have generally observed in a case of dislocation. This may possibly have arisen from the efforts which he had made to produce motion, under the impression that it was only a sprain. On turning him on his face, the nates of the injured side appeared much broader and rounder than on the other side, and where the hollow usually exists behind the trochanter, an elevation was perceived, which, on examination, appeared to be the head of the bone, which rotated when the necessary movements were given to the femur.

The patient was etherized, to the point of total relaxation of the muscles, and pulleys were applied and the limb drawn down to the same length as the other. An attempt was now made to turn the head of the bone into its socket, but although at the efforts at rota-

tion a tearing sound was heard, as if strong adhesions were being broken up, yet the bone could not be forced into its socket. An effort was now made to reduce it by Dr. Reid's method; this also failed, the only effect being to carry the head of the bone around the socket and lodge it in the foramen ovale. From this position it was easily brought back to its original situation on the dorsum. Pulleys were now re-adjusted, and the limb again brought slowly down, so as to bring the head opposite the acetabulum, and the pulleys being relaxed, a sudden twist and lift was given to the limb, which went into its proper place with a jerk. The limb at first, after the reduction, had rather an unnatural appearance, partly from the stretching which the muscles had undergone, and partly from its being apparently longer than the other, so that I thought that possibly it might have again slipped under the socket; but on moving the limb, I found it had those free motions which can only be given to a bone in its natural position. The apparent length of the limb arose from a deviation of the pelvis, it having been three weeks in a strained position.



## GUN-SHOT WOUNDS.

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I.—*Bullet split by coming in contact with Bone.*—An occurrence very common with the ordinary spherical bullet, is to split on coming in contact with bone. The following interesting case occurred at the battle of Bull Run:—Lieut. Burd, of the 4th Maine Reg., a gentleman who before the war had distinguished himself by some discoveries in telegraphic communication, was struck on the left side of the os frontis with a round ball, and was supposed by his comrades to be mortally wounded. He was made prisoner, and taken to Richmond. A projection was felt under the scalp, about four inches from the wound in the integuments, and an incision made over it, from which half of the bullet, with a highly polished cut surface, was removed. He remained seven months a prisoner at Richmond, during which time the wound in his forehead continued open, and suppurated freely. He was troubled with some uneasiness in the head, and by occasional headache. On his arrival at Fortress Monroe, after his release, this discharge still continuing, the wound was examined by Dr. Cuyler, U. S. Army, the distinguished surgeon at that post, who, on investigation, discovered a metallic substance deep in the wound. This was skillfully extracted, and, as the patient states, a small portion of brain escaped at the time. On examination, the extracted body proved to be the other half of the ball, flattened on both sides, and having imbedded in it a portion of the skull. On the next day, a piece of the inner table of the skull, which had been driven before the ball into the brain, was also extracted. After removing these substances, the wound healed.

The patient afterwards came under Dr. Warren's observation, and remained for some time in delicate health.

Dr. Fox, of the Naval Hospital at Chelsea, showed Dr. W. a case in which a ball penetrated in the middle of the arm, and was cut out over the scapula. In its passage it struck the edge of the scapula, cutting the ball nearly in halves, and flattening it out in this position.\*

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\* The ball was exhibited to the Society.

In almost every instance that Dr. W. had met with, when the round ball encountered bone, it was either flattened, or if it met the edge of a bone, as of the jaw, or rib, it was cut in halves.

II.—*Gun-shot Wound in the Neck.*—At the battle of Bull Run, a man was struck in the neck, just behind the angle of the jaw, over the point of bifurcation of the carotid artery. The shot being fired from below, the ball penetrated in an upward direction, and struck the edge of the jaw, and was cut in two by it, a portion of the bullet remaining in the neck. The other, a larger part, passed through the base of the tongue, and carried away a portion of the alveolar process of the upper jaw, escaping through the cheek. The hæmorrhage from the wound was at first rather profuse, but was checked by pressure with a handkerchief, and did not recur. The wounds healed kindly, but an abscess formed in the neck, which was opened, and portions of lead and spicula of bone were removed from it. After one or two abscesses of this kind had formed, he recovered.

III.—*Gun-shot Wound in the Leg.*—A man, 27 years of age, was hit by a bullet on the inside of the left leg, about its middle. The ball passed through the tibia, producing a compound fracture of the bone. The fracture united after a very long time, and the wound of entrance healed. The wound of exit, however, remained open, and when Dr. Warren saw him, eight months after the reception of the injury, was of the size of a half dollar, and had an unhealthy look, resembling epithelial cancer. The edges of the wound had already been dissected up, in the hope of relieving tension, and producing a healthy state of the wound. Dr. W. determined to dissect out the entire ulcer, which was done. In the centre of the wound, and between the bones, a black substance was discovered in an encysted state. This was at first thought to be powder, but was afterwards explained by the patient stating that, when in Richmond, on account of a sloughy condition of the wound he had been in the habit of sprinkling it with charcoal, some of the granules of which had been covered up, and retained there. The wound, after the operation, took on a healthy action, and is now well.

IV.—*Gun-shot Wound through the Os Calcis.*—The following case exemplifies the very slow way in which wounds of a spongy bone take on the healing process. Richard Roe, a private in the 1st Reg. Mass. Volunteers, was struck by a ball in the left heel, the ball passing round the os calcis, and coming out on the other side. The enemy were firing up from a hill, a little below. Shortly afterwards he exposed the other foot, when another ball struck him in exactly the same

spot on that foot, passing through the os calcis. He was carried a prisoner to Richmond, where he was under the care of Dr. Charles Bell Gibson, of the Confederate Army. Inflammation was so extensive, and the pain so severe, that he at one time requested Dr. Gibson to amputate the foot, which he very properly declined to do. The patient came under the care of Dr. W. about six months afterwards, having regained his liberty. On probing the wound, Dr. Warren discovered a large bit of detached bone. The wound was enlarged, and a portion of bone the size of a chestnut removed, and the bone, which was rough in one place, made smooth. After this, the wound gradually healed, so that at one time he could use the foot in walking. It then became inflamed, and again began to discharge. Dr. W. advised him to enter the Hospital, two months after the first operation. The bone was now exposed by a large incision, and the whole interior of the cavity excavated with a chisel and drill. The mouth of the aperture in the bone was made much wider than the interior. In April, 1862, nearly nine months after the accident, the wound was again nearly healed, but still painful if he attempted to walk upon it, and it was difficult to say whether he would recover without the removal of the whole bone. The rest of the foot was in a perfectly healthy state. At the present moment, June, 1862, the wound has contracted to a small point, there is a serous exudation from it, and he is able to walk about.

V.—*Gun-shot Wound in the Thigh—no trace of the Ball at first to be discovered.*—Major S., while gallantly commanding at the head of his regiment at the battle of Newbern, received a ball in the upper, and front part of the thigh, about two inches below Poupart's ligament. The whole regiment, at the time, were in the advance and were exposed in an open field, in a reclining position, firing on the enemy, who, in return, were firing down upon them from breast-works. He felt a blow on the leg as if from a stone, and was not aware that he was wounded, until, on removing his coat, he saw the blood flowing freely. He went on giving his orders until he became faint, and was taken to the rear. The wound being probed by the surgeon, was found to extend in a direction downwards and inwards for three or four inches. The ball could not be found in the wound, nor could any trace of it be detected elsewhere. The only sensation he felt, in addition to a general want of power in the limb, was that of slight numbness in the calf of the leg, and a soreness in the foot. Perfect rest of the limb was enjoined upon him, and shortly afterwards he was brought home in a transport vessel with other wounded soldiers. Dr. Warren saw him in company with his physician, Dr. Charles Gordon, about three weeks after the date of the injury. An excavated ulcer,

of the size of a quarter of a dollar, marked the situation of the entrance of the ball. Underneath it, in the cellular membrane, was a deposit of lymph, which, on being moved to and fro over the muscles, gave at first the sensation of the presence of a ball at that spot. A small pin-hole in the centre, from which issued a serous fluid, at first seemed to confirm this view ; the history of the wound, however, was opposed to it. A probe being gently pressed into the opening, encountered no foreign substance. The patient, being of fine physical development, and quite free from fat, the contour of the various muscles was strongly marked. A careful examination was now made of the whole limb, commencing at the toes and going up to the groin, making such manipulations as to leave no one of the muscles or inter-muscular spaces unexplored. Not the slightest pain could be produced or induration felt, to mark the presence of the concealed bullet. Finding no trace of the ball, it was decided to allow the patient to use the limb. On first making an attempt to stand, he found much difficulty in doing so, both from the stiffness of the wound and from the disuse of the limb, but being supported by two persons, and making an effort, he was gradually enabled to move around the room. Dr. W. advised a continuance of this exercise, in order that he might regain, as soon as possible, the power of the muscles, and with the hope that the muscular action would bring the ball from its hiding-place. This proved to be the case, for in about a couple of weeks a hard movable substance, which felt like half a sphere, was found travelling up the limb. The bullet, it was hoped, would follow up the track of the wound ; but it was soon discovered that it was very movable, quite under the rectus muscle, and could not be distinguished at all when this muscle was contracted. After arriving under the old wound, it was thought possible that it might rest there ; but it was found that its disposition was upward, towards the groin. Major S. being very desirous to get rid of it, and rejoin his regiment, decided to have it removed.

The ether being given, the patient was placed on a table, with the light from above, and an incision was made through the skin, cellular membrane and fascia, and the muscle uncovered. No cicatrix could be found further, as a guide. The ball was now fixed by an aid, and the muscle carefully cut through, a vessel that ran across it being tied, so as to prevent any deep-seated effusion of blood. The ball, from its constant disposition to change its position for an inch or more, caused some embarrassment. The ball was felt to be resting on the bone. It was now fixed by two fingers in the deep wound, and the muscular fibres over it cut, and its blue color was seen through the delicate investing sac. It was necessary to divide this in several directions before it could be pushed out with a director. It was a round

bullet, flattened on one side, as if it had struck the bone and then glanced down the limb. The bone, not denuded, could be felt beneath. The wound was brought together by adhesive straps, and a cold-water dressing placed over it. The most rigid quiet of the limb was enjoined. The limb on the following day was sore and swollen, and on the fourth day an abscess formed in the situation of the sac which contained the bullet, and discharged itself through the wound. By continued rest of the limb, and absence of muscular motion, any effusion of pus under the muscle was prevented. The patient is now rapidly recovering.

In the present instance, and in one or two similar ones, no tenderness in the track of the ball pointed out the course which it had taken, and this fact is important, as the want of sensibility in the track taken by it is occasionally given as an argument that it has not entered at all. As before stated, a pain was felt in the calf of the leg, at the time the wound was received, also a numbness of the foot, and soreness about the ankle. The former disappeared after a time, but the soreness of the ankle continued until the extraction of the ball.

VI.—*Gun-shot Wound from a Conical Bullet in the Calf of the Leg, carrying in the Clothes.*—Lieut. C., of the 2d Mass., whose Regiment had fought during the whole day, as rear guard in retreat, the day before the battle of Winchester, and probably saved the army, arrived in front of that place at 12 o'clock at night, having marched 35 miles without food, their drink being the muddy water of the roadside. Lieut. C. had charge of the camp guard for the night. At 4 o'clock in the morning the battle commenced, and lasted four hours, when finding themselves in danger of being surrounded, the order for retreat was given. The Regiment formed in regular marching order, and marched down the hill into Winchester, regardless of the enemy in full pursuit, who were firing into them. Lieut. C. was in command of the rear Company, in fact the last person bringing up the rear. He received at this time a shot in the gastrocnemius muscle, the sensation of which was as of a violent blow with a club, which knocked him down. He attempted to rise, but after stumbling a few steps, fell headlong. By this time, fortunately, the Sergeant of his Company perceived his situation, and being a man of great size and strength, took him in his arms, carried him about two hundred yards into the streets of Winchester, and deposited him in the only ambulance wagon that happened to be there. A number of other wounded men were also put into the same wagon, some of them lying upon him. He contrived to put his head out of the front of the vehicle, so as to get air, and in this position, with a man lying on his wounded leg, remained until they arrived in Williamsport, on the following morning,

some 16 or 24 hours. He was so completely pinned to the spot, that he was unable to sheathe his sword, which lay drawn by his side, just as he was placed with it in the ambulance.

On the passage through Winchester, a torpedo, apparently thrown at the ambulance, and which if it had penetrated, would have destroyed all the wounded within, struck the head of a man with his arm in a sling, and having hold of the shaft, within two feet of Lieut. C., blew it to atoms, scattering his brains over the wagon. A woman also fired a shot out of a window at them. After passing through the town, they still remained a mark for the enemy's bullets, but very shortly the further pursuit appears to have been stopped. Late at night the ambulance arrived near the borders of the Potomac, where a great rush of wagons was attempting to cross the river. The wounded would have remained in this position the whole night, the frightened wagoners absolutely refusing to move, had it not been for the untiring energy of Gen. Banks, who spent the whole night on the right bank, superintending the passage of the troops, and who ordered off the wagons and enabled the wounded to cross. On the afternoon of the following day Lieut. C. had his wound examined. It was found that the ball had penetrated at the outer and upper part of the left leg, going through the belly of the gastrocnemius muscle, lying down in the vicinity of the great vessels, and its course stopped by the bone. It had carried in with it a patch of the trousers and the drawers, which were of thick knit woolen, without tearing them. From the swelling of the wound the whole of this plug, nearly as large as the cork of a quart bottle, had been completely wedged into it, so as only to be withdrawn by free incisions. The wound remained quite painful for a few days, until suppuration had commenced, and now, after the lapse of a month, is slowly healing, and the patient getting about on crutches. The leg is somewhat bent, and cannot easily be placed on the floor on account of the contraction of the injured muscle.

The case is given somewhat in detail, to show to what extent the soldier is exposed, independently of the danger from his wounds. That a young man, scarcely 18, should be able to march 35 miles with his regiment, constantly fighting, and without food, keep guard all night, and engage in a battle lasting four hours the next morning, be wounded, and while suffering and bleeding lie 36 hours with a man on his swollen limb, and nothing to sustain him, except on the second day a swallow of whiskey given by a woman who saw his head hanging out from the ambulance with his pale and fainting appearance, shows how much the human frame will bear when assisted by spirit and determination.

VII.—*Comminuted Fracture of the Elbow Joint; Excision.*—A man, 25 years of age, entered the hospital a week after the battle in front of Richmond, having received a ball directly through the elbow joint. There was no great pain nor irritation about the wound, not much, if any, suppuration, and his appetite was good. The wound of exit was the same as the wound of entrance. The only application had been cold water. As the wound was offensive, a poultice was applied. In a few days some irritation was manifested, and a number of bits of bone were removed. In another week, the pain coming on again, with inflammatory symptoms, the patient was etherized to allow of a more full investigation, which could not be supported without. It was now found that all the bones composing the elbow were broken, the condyles being loose, and the fracture extending quite up the arm. The two wounds were now connected by an incision across the back part of the joint, and the elbow joint excised, comprising, at least, three inches of the humerus.

VIII.—*Bullet Wound in Leg, leaving no trace of its Course.*—Gen. D. was wounded in the battle before Richmond, by a ball which struck him on the outer side of the tibia. A probe penetrated about an inch. The bone was denuded, but no soreness indicating the track which the bullet could have taken down the leg was to be discovered.

IX.—*Bullet Lost in the Leg.*—A man entered the hospital who the day before had received a wound in the upper part of the calf of the leg, from a gun in the hands of a comrade. It had been probed for some depth, but no ball found. It had disappeared in the direction of the foot, where a shock was felt, as if it was paralyzed, at the time. No trace of the ball could be found, and no soreness of the limb except at the orifice of the wound. He was discharged, able to walk well, the third day.

X.—*Wound in Chest from Grape Shot.*—A man, 28 years of age, was brought into the Hospital on account of a wound in the thorax received a week before at the battle of Newbern. The ball, which was an iron one, weighing six and a half ounces, struck him as he was in a stooping position, in the left axilla, wounding the fleshy part of the arm, which was in contact with the side. It forced in the ribs, probably ran between the skin and the parietes of the thorax, and made its appearance under the skin of the sternum, where it was cut out. The ribs were broken at this spot at their junction with the sternum. The lungs were wounded, and he expectorated blood. In what manner the wound in the lungs was produced, it was impossible to say—whether by the ball, or the fractured ribs. When he entered the

hospital, no tenderness or ocular appearance indicated the track of the ball, so that it could not be said whether it had gone through the chest, or had run along on the outside of the ribs. The wound in the axilla healed rapidly, that on the sternum very slowly. There was no fistulous opening left, and no discharge of bone. The patient recovered slowly, his principal symptom being great debility.

XI.—*Bullet in Pelvis.*—J. Y., aged 18, received two balls at the battle of Williamsburg. One struck him on the upper and back part of the left arm, and went behind the bone, coming out in front of the chest. The other entered an inch above a line drawn midway between the trochanter major and middle of the sacrum, in the left hip, and disappeared there. He was disabled, though not in great pain at first. A week after, he was seized with the most excruciating pain in the course of the sciatic nerve of that side. He was taken to Baltimore, from which place he was brought on to Boston by steamboat and railroad, being carried always in his father's arms, to lessen the jar from the motion of travel. Dr. W. saw him about ten days after the reception of the wound. His left limb was drawn up, and he could not make the slightest movement, without severe pain. A probe passed into the wound penetrated three inches, when a hard substance was encountered. Whether it was bone, or the bullet crushed against the bone, could not be determined. The following day I had him removed to the hospital, and made an exploratory examination under ether. The external wound being enlarged, the finger passed through the gluteus maximus, under which was a cavity. Still farther on, through a narrow space, the pelvis was reached, and a smooth opening which appeared to be the sciatic notch. On the inner side of the notch was a hole, through which the ball had penetrated into the pelvis, the spicula of bone lying loose in the neighborhood of the sciatic nerve. These were removed. Another smooth cavity, which would hold an ounce of fluid, had been formed under the deep muscles. A probe passed easily two-thirds through the pelvic cavity without encountering the ball. Water dressings, and a poultice afterwards, were put on the wound, and the patient is much relieved by the operation. The principal cause of irritation appeared to be the fragments of bone lying on the great nerve. The situation of the ball does not appear.

XII.—*Molar Tooth lodged in the Tongue.*—A man, about 20 years of age, entered the Hospital about ten days after the battle of Williamsburgh, having received a wound from a bullet which struck the right side of the lower jaw, and passed out through the upper lip. The jaw was shattered, and when he entered the Hospital, there were purulent deposits connecting with the neck externally and the mouth

internally. The patient was etherized, and the wound being explored, bits of bone were found everywhere buried in the substance of the cheek and the surrounding soft parts. These were extracted, and the wound healed rapidly. Some weeks afterwards, he presented himself at the Hospital with a swelling in the tongue, the edge of which had been wounded by the bullet, and which, until lately, he had been unable to protrude. On examination, a hard body was found imbedded in the substance of the organ, which on being cut upon, proved to be a molar tooth which had been knocked out of the jaw and buried in the tongue.

XIII.—*Extraction of Bullets.*—Dr. Macleod, in his valuable notes on the Surgery of the war in the Crimea, makes the following remarks on the Extraction of Balls, which we may be pardoned for appending. “Few questions connected with gun-shot wounds have given rise to so much discussion and diversity of opinion as that with reference to the *extraction of balls.*” . . . . . “If we examine into the opinion of surgeons on this point, we find that nearly all those who look on the extraction of the ball as a secondary point, are civilians; while military surgeons place great weight upon its accomplishment. The true way of putting the question is, not whether balls may remain in the body without causing annoyance, but whether they do so in so large a number of cases as to warrant non-interference.” . . . . . “In this country we have not many opportunities of obtaining extensive information on the point as connected with the subsequent history of men with balls remaining unextracted, but such information is supplied from the Hôtel des Invalids of France, by M. Hnntin, the Chief Surgeon to that magnificent establishment. He tells us, that while four thousand cases had been examined by him in five years, only twelve men presented themselves, who suffered no inconvenience from unextracted balls; and the wounds of two hundred continued to open and close till the foreign body had been removed.” “Before a ball becomes encysted, it may set up grave inflammation which will mat together and embarrass parts; press upon bone, and perhaps cause exfoliation; ulcerate bloodvessels, and so irritate nerves as to occasion affections as severe and fatal in their results as tetanus. It is somewhat remarkable that in the wounded who came under my care, two died of tetanus, in the very small number of instances—four or five at most—in which I could not find the ball. If this was a mere coincidence, it is the more curious. Gravitation, and muscular motion, may so change the position of a ball, that from a harmless site, it may be removed to one of much danger. It may thus work into a cavity, and cause fatal results.” “It seems, then, the teaching of experience, as

it is of common sense, that whether the question be viewed as one bearing immediately, or remotely on the result—on the *cure* of the patient, in the proper acceptation of the term—we should, as soon as practicable, ascertain the position of the ball, and remove it, along with any other foreign body which may have been introduced with it, always supposing that by such a proceeding we do not cause more serious mischief than experience shows the presence and after effects of the ball can produce.”

## CASES OF EXTRAORDINARY FECUNDITY.

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AT a late meeting of the Boston Society for Medical Improvement, the question arose as to how many children had ever been born at one birth. Dr. WARREN remarked that many years ago, while traveling in England, a house was pointed out to him, in which, it was said, were then living five children born at one birth.

At a subsequent meeting, Dr. Warren read an abstract of several published cases, as follows :—Ambrose Paré, who may be believed when he quotes from his own experience (Lib. 25th, cap. 3d), states that in his time, in the parish of Seaux, near Chambellay, there was a noble family of the name of de Maldemeure. The wife of the last lord of Maldemeure gave birth, within a year after her marriage, to twins; the next year she had three children; the third year, four; the fourth year, five; and the fifth year, six. In this last labor she died, and of the six children one survived, and is now lord of Maldemeure.

Another case of six children at a birth is copied from the *Gazette Médicale* into the *American Journal of Medical Sciences* (vol. 12, for the year 1833). “On the 30th of December, 1831, the wife of a man named Deruian Ploson, living in the village of Dropin, in Bessarabia, was delivered of six daughters (the fruit of one pregnancy), all living, and only a little smaller than the usual size of children at birth, with the exception of the last, which was much the least. The mother is not quite 20 years old, and is of a strong constitution. The whole six children lived long enough to be baptized, but died in the evening of the day of their birth. The mother suffered from a severe indisposition subsequent to her confinement, but is now quite well.”

Dr. Garthshore (*Phil. Trans.*, b. 77, 1787) reported a case which occurred in the practice of John Hull, Surgeon. On the 25th of April, 1786, Margaret Waddington, a healthy woman of 21 years, gave birth to five girls. Of these, two were alive, but soon died; one was but recently dead; and the other two were putrid. There were five distinct sacs and cords, but the five placentæ were so fused together as to appear but one. The portions of placenta belonging to the two putrid children were also slightly putrid.

Dr. G. states that in the *Commercium Literarium Norimbergense*, for the year 1731, two cases are reported of five living children at one birth. Of these cases, one occurred in Upper Saxony, the other near Prague.

Dr. G. also states that two foreign medical men, whom he had met in London, related to him cases of five children at a birth, which were said to have occurred near Ghent and near Paris. Of these cases he heard nothing more, and felt in doubt as to the accuracy of the report.

In the list of births recorded in the *Gentleman's Magazine*, two cases are given of five children at a birth. The first occurred October 5, 1736, in a dairy-cellar, in the Strand, London. Three of the children were boys. The other case occurred in March, 1739, at Wells, in Somersetshire. The children, four boys and one girl, were all christened, and reported likely to live.

Two or three of the following cases are quoted from Dr. Paul F. Eve's curious and interesting work of Remarkable cases in Surgery.

(*American Journal of Medical Sciences*, vol. iv., 1829.) Case of five children at a birth, furnished by Dr. Weiss, and communicated to the clinique by M. Carus. A woman 27 years of age, of medium stature, who had been married five years, after having given birth to twins two years before, was put to bed with five children. The regular period of pregnancy was past, and nothing in particular occurred, except that the woman felt herself more feeble than usual, with less inclination to eat and sleep. The abdomen had been very much distended, especially on the right side. Movements had been felt, chiefly on the left side. The birth of the first child was very easy, and took place soon after the formation of the watery sac. The others came more slowly, and the last was much the most difficult birth. Each was enclosed in a separate sac, and was immediately followed by its particular placenta. All were born with the head presenting in the first position. The first two were boys, then a girl, next a boy, and then another girl. Not one of the children survived the third day. Their length varied from  $15\frac{1}{2}$  to  $16\frac{1}{2}$  inches. The second boy weighed less than two pounds. Although all were regularly formed, they did not appear to have attained perfect maturity. With the boys, the cord was 16 inches long, but only 12 with the girls; the pulsation of the cord could scarcely be perceived at the moment of birth. The children had an old look, the voice was tremulous, they slept continually. Their temperature was very low. The mother soon regained her health.—(*Gemeinsame deutsche Zeits. für Geburtskunde*.)

(From the London *Lancet*, vol. xxxvii., 1839, page 743.) Case of a woman pregnant with five children. Dr. Evory Kennedy produced five fœtuses, with their involuera, the product of a single abortion, at the meeting of the Dublin Pathological Society, held on the 14th

inst. The patient had been attended by his late assistant, Dr. Thwaites, and pupils of the Hospital, and the facts of her case were accurately noted, so that deception was impossible. The specimen produced, Dr. Kennedy stated to be the multiparient conception of a female, who aborted when, as she stated, she was three months gone with child. The case was one in which there appeared to be three distinct ova; two of these were twins, the third was single, so that five fœtuses co-existed in utero. On examining the preparation, Dr. Kennedy remarked, that, closely viewed, it would be found that those on each side differed from the centre one. Each of the former possessed a common placenta, and membranes common to both, with an intervening septum; but the centre one is distinct and perfect in itself, having its own placenta and membranes. Some persons have been disposed to question the occurrence of these multiparous births; indeed, it must be acknowledged that the popular opinion, and even recorded cases, on the subject, are sufficiently extravagant; as, for instance, the Countess of Hanneberg's case, in which it was stated that 365 children were produced at a single birth. But without taxing our credulity in these cases too far, we have undoubtedly a few well-authenticated instances on record, in which women have given birth to five children at a time. One of these, Guiseppe Califani, occurred lately at Naples; and we have the details of another, which took place in Franklin County, in America, about twelve years ago, recorded by Dr. Paddock. There is also said to be a similar preparation in the British Museum. It is extremely curious and interesting, as connected with the history of multiparous births, that in this respect Ireland preponderates over all other nations, and that the Irish are unequalled in the ratio of their fecundity. The proportion of twin cases in Dublin is one in sixty; in America (where, it is to be recollected, there is a large number of Irish emigrants), the proportion is one in seventy-five; in London it is one in ninety-one; while in France, "*longo intervallo*," it is one in one hundred and forty. In proof of the rarity of five twin children, Dr. Kennedy further remarked, that out of 140,000 cases recorded in the Lying-in Hospital of Dublin, there is no instance of five children at a birth. There is one case of four, but none of five. It is a curious fact that in the American case the mother was an Irish woman, and had recently arrived in America. It may perhaps be considered equally curious that in the case detailed by Dr. Kennedy, the father was a man of small stature, aged about 30, without any remarkable personal development, and by trade a tailor! The woman, the subject of the present memoir, whose name is Sarah Hickey, is 28 years of age. She was married about two years ago, and within nine months after brought forth her first child. The conception was uniparient. After the lapse of six months, she again conceived of the fœ-

tuses alluded to, and observed that during the pregnancy she increased very rapidly in size, and suffered very constantly from bearing-down, which rendered walking or standing almost impossible. She had constant sickness of stomach—a symptom generally looked on as an evidence of compound pregnancy. As to the abortion, it would appear to have been produced by inordinate distension of the uterus for its period, which, in its turn, led to parturient efforts, as the ova presented no morbid appearance. The fœtuses, which are all males, do not appear to exceed the development usually observed about the second month. And as Mrs. Hickey menstruated on the 24th of May, and miscarried on the 26th of August, it is more than probable she overcalculated the duration of her pregnancy. This preparation is in Dr. Kennedy's Museum, in the Dublin Lying-in Hospital.

Dr. Warren stated that he had received the following account from a lady in New York, who had visited the mother and children, of a case of the birth of twelve (12) living children in the space of 42 months (3 years 6 months).

Mrs. M., 32 years old, was married at 14. Her first child died. She then had twins, one of which lived a month, the other six weeks. Then twins again, both of which died. She then had a child who is now a fine healthy girl, 14 years of age. She then miscarried with triplets. Afterwards she gave birth to 12 living children, in the space of about 42 months, in the following order:—

July 24th, 1858, - - - - -	one (1)
June 30th, 1859, - - - - -	two (2)
March 24th, 1860, - - - - -	two (2)
March 1st, 1861, - - - - -	three (3)
February 13th, 1862, - - - - -	four (4)
Total, - - - - -	<hr/> twelve (12)

And in all, 21 children in 18 years.

The woman has never been confined to her bed more than three days after delivery. The children are all remarkably healthy and well developed for their years.



